Space Weather Forecast

Issued on Tuesday, 02 April 2024 at 01:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Flare activity declining, with a decreasing chance of Moderate flares. Active to G1 Minor Storm intervals likely into Day 2 (03 Apr) due to the expected arrival of faster solar winds.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Moderate with a Moderate flare at 01/0132 UTC. This appeared to be a dual flare, comprising components from a region in the northwest and the recently departed large region from over the southwest limb. There four simple sunspot regions on the disc. The only notable recent sunspot development on the Earth-side was the emergence of a region near the northwest limb. This region was implicated in the recent Moderate flare. Overall, it looks a fairly straightforward region, although its proximity to the limb means we are unable to see the finer detail in its magnetic structure.

No Earth-directed Coronal Mass Ejections (CMEs) were observed in available imagery, although a CME emerging to the southwest in recent coronagraph imagery has an uncertain source and is under investigation.

Solar Wind / Geomagnetic Activity: Ongoing fast solar wind conditions were observed. Solar wind speeds were slightly elevated to elevated, mostly varying between 450-520km/s. Total Interplanetary Magnetic Field (IMF), was weak to moderate, peaking to start the period. The important north-south component, Bz, varied mostly weakly between +7/-7nT. Geomagnetic activity was Quiet to Unsettled (Kp1-3) but with one Active (Kp4) interval 01/0600-0900 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is expected as the recently departed large sunspot rotates well onto the far-side with only smaller sunspot regions currently on the disc. A very slight chance of isolated Moderate flares, both initial and increasing by the end of the period.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs, although this is only moderate confidence with a small chance of a glancing arrival on Day 2 (02 April) from a weak CME that left the Sun on 29 Mar.

Otherwise current elevated wind speeds may gradually ease through Day 1 (02 Apr). The next enhancement from faster solar winds associated with prominent coronal holes currently near centre disk is then expected into Day 2 (03 Apr) with any enhancement expected to continue through Day 3 (04), perhaps gradually easing by Day 4 (05 Apr).

Geomagnetic activity is forecast to be mainly Quiet on Day 1 with a chance of Unsettled to

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Active intervals from current fast wind or possible glancing CME influence. Activity then increasing to become Active with a chance of G1 Minor Storm intervals due to the fast wind onset Day 2 and perhaps early Day 3, before easing to Quiet to Unsettled with a chance of Active intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels, but with a very slight chance of enhancement above the S1/Minor Radiation storm level Day 1 (02 Apr) given any strong flares from the recently departed large sunspot.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	50	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	10	5	10	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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